**Multisite Analysis of Patient Experience Scores and Risk of Hospital Admission:**

**A Retrospective Cohort Study**

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**Supplemental Table 1: Association of Individual Patient Experience Items and 30-Day Hospital Admissiona**

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| **HCAHPS survey items****(favorable vs unfavorable response)** | **30-day hospital admission after receipt of HCAHPS survey** **by the third-party vendor** |
| Model 1 | Model 2 |
| Odds ratio (95% CI) | *P* value | Odds ratio (95% CI) | *P* value |
| **Composite Measures** |  |  |  |  |
| Communication with Nurses |  |  |  |  |
|  Treated with courtesy and respect | 0.79 (0.68–0.93) | 0.004 | 0.92 (0.78–1.08) | 0.30 |
|  Listened carefully | 0.85 (0.75–0.96) | 0.009 | 0.97 (0.86–1.10) | 0.64 |
|  Explained things in a way you could understand | 0.85 (0.75–0.95) | 0.005 | 0.96 (0.85–1.08) | 0.47 |
| Communication with Doctors |  |  |  |  |
|  Treated with courtesy and respect | 0.78 (0.66–0.91) | 0.002 | 0.96 (0.82–1.13) | 0.65 |
|  Listened carefully | 0.80 (0.71–0.90) | <0.001 | 0.97 (0.85–1.10) | 0.61 |
|  Explained things in a way you could understand | 0.80 (0.72–0.90) | <0.001 | 0.98 (0.87–1.10) | 0.69 |
| Discharge Information |  |  |  |  |
|  Staff discussed help needed after discharge | 0.91 (0.77–1.08) | 0.29 | 1.07 (0.90–1.26) | 0.46 |
|  Received information on symptoms or health problems | 0.88 (0.73–1.07) | 0.20 | 1.10 (0.91–1.33) | 0.34 |
| Care Transition |  |  |  |  |
|  Staff considered needs after discharge | 0.92 (0.83–1.01) | 0.09 | 1.02 (0.92–1.13) | 0.71 |
|  Understood how to manage health  | 0.81 (0.73–0.89) | <0.001 | 0.91 (0.82–1.01) | 0.07 |
|  Clearly understood purpose of medicines | 0.87 (0.79–0.96) | 0.006 | 0.96 (0.86–1.06) | 0.39 |

Odds ratios (95% confidence interval) from logistic regression analysis using model 1 (included age, sex, race, and study site) and model 2 (included model 1 covariates plus service line and Elixhauser comorbidity index). Study sites were Mayo Clinic Arizona, Mayo Clinic Florida, MCHS, and Mayo Clinic Rochester. MCHS is a network that includes 17 hospitals in Minnesota and Wisconsin.

aPatients living ≤60 miles of a Mayo Clinic hospital and the HCAHPS survey was received by the third-party vendor ≤60 days after

hospital discharge. Admission was to any Mayo Clinic hospital ≤30 days after survey was received by the third-party vendor.

Favorable response indicates the most satisfactory response: always; score of 9 or 10; yes; definitely yes; strongly agree.

Abbreviations: CI confidence interval; HCAHPS Hospital Consumer Assessment of Healthcare Providers and Systems; MCHS Mayo

Clinic Health System.

**Supplemental Table 2: Association of Individual Patient Experience Items and 30-Day Hospital Admission Categorized by Service Linea**

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| --- | --- |
| **HCAHPS survey items****(favorable vs unfavorable response)** | **30-day hospital admission after receipt of HCAHPS survey** **by the third-party vendor** |
| Medical service line | Surgical service line |
| Odds ratio(95% CI) | *P* value | Odds ratio(95% CI) | *P* value |
| **Composite Measures** |  |  |  |  |
| Communication with Nurses |  |  |  |  |
|  Treated with courtesy and respect | 0.98 (0.80–1.19) | 0.81 | 0.83 (0.64–1.08) | 0.16 |
|  Listened carefully | 0.97 (0.83–1.13) | 0.69 | 0.98 (0.80–1.21) | 0.86 |
|  Explained things in a way you could understand | 0.93 (0.81–1.08) | 0.33 | 1.01 (0.83–1.25) | 0.89 |
| Communication with Doctors |  |  |  |  |
|  Treated with courtesy and respect | 1.06 (0.87–1.29) | 0.56 | 0.78 (0.59–1.03) | 0.07 |
|  Listened carefully | 1.00 (0.86–1.16) | 0.95 | 0.92 (0.73–1.14) | 0.44 |
|  Explained things in a way you could understand | 0.99 (0.86–1.14) | 0.91 | 0.95 (0.77–1.17) | 0.62 |
| Discharge Information |  |  |  |  |
|  Staff discussed help needed after discharge | 1.07 (0.88–1.30) | 0.49 | 1.09 (0.77–1.56) | 0.62 |
|  Received information on symptoms or health problems | 1.23 (0.99–1.53) | 0.07 | 0.73 (0.50–1.06) | 0.10 |
| Care Transition |  |  |  |  |
|  Staff considered needs after discharge | 1.03 (0.90–1.16) | 0.70 | 1.02 (0.87–1.21) | 0.79 |
|  Understood how to manage health  | 0.96 (0.85–1.09) | 0.55 | 0.84 (0.71–0.98) | 0.03 |
|  Clearly understood purpose of medicines | 0.93 (0.82–1.06) | 0.27 | 1.02 (0.86–1.21) | 0.79 |

Odds ratio (95% confidence interval) from logistic regression analysis using model 2 (included age, sex, race, study site,

and Elixhauser comorbidity index). Study sites were Mayo Clinic Arizona, Mayo Clinic Florida, MCHS, and Mayo Clinic Rochester.

MCHS is a network that includes 17 hospitals in Minnesota and Wisconsin.

aPatients living ≤60 miles of a Mayo Clinic hospital and the HCAHPS survey was received by the third-party vendor ≤60 days

after hospital discharge. Admission was to any Mayo Clinic hospital ≤30 days after survey was received by the third-party vendor.

Favorable response indicates the most satisfactory response: always; score of 9 or 10; yes; definitely yes; strongly agree.

Abbreviations: CI confidence interval; HCAHPS Hospital Consumer Assessment of Healthcare Providers and Systems;

MCHS Mayo Clinic Health System.

**Supplemental Table 3: Individual Patient Experience Items and 30-Day Hospital Admission Categorized by Elixhauser Comorbidity Indexa**

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| --- | --- |
| **HCAHPS survey items****(favorable vs unfavorable response)** | **30-day hospital admission after receipt of HCAHPS survey by the third-party vendor** |
| Elixhauser comorbidity index |
| Lower tertile | Middle tertile | Upper tertile |
| OR (95% CI) | *P* value | OR (95% CI) | *P* value | OR (95% CI) | *P* value |
| **Composite Measures** |  |  |  |  |  |  |
| Communication with Nurses |  |  |  |  |  |  |
|  Treated with courtesy and respect | 1.23 (0.80–1.91) | 0.35 | 1.01 (0.69–1.48) | 0.97 | 0.79 (0.65–0.96) | 0.02 |
|  Listened carefully | 1.42 (1.02–1.99) | 0.04 | 0.86 (0.66–1.11) | 0.24 | 0.88 (0.76–1.03) | 0.10 |
|  Explained things in a way you could understand | 0.99 (0.74–1.31) | 0.92 | 0.97 (0.75–1.25) | 0.80 | 0.92 (0.79–1.06) | 0.26 |
| Communication with Doctors |  |  |  |  |  |  |
|  Treated with courtesy and respect | 1.05 (0.70–1.57) | 0.83 | 0.89 (0.63–1.24) | 0.48 | 0.94 (0.77–1.14) | 0.52 |
|  Listened carefully | 0.93 (0.69–1.26) | 0.65 | 1.00 (0.76–1.31) | 0.97 | 0.93 (0.79–1.09) | 0.34 |
|  Explained things in a way you could understand | 1.12 (0.84–1.51) | 0.44 | 0.98 (0.76–1.25) | 0.85 | 0.90 (0.78–1.04) | 0.17 |
| Discharge Information |  |  |  |  |  |  |
|  Staff discussed help needed after discharge | 1.37 (0.90–2.09) | 0.14 | 0.88 (0.63–1.22) | 0.44 | 1.11 (0.89–1.40) | 0.35 |
|  Received information on symptoms or health problems | 1.12 (0.70–1.81) | 0.64 | 1.20 (0.78–1.84) | 0.42 | 1.03 (0.81–1.31) | 0.79 |
| Care Transition |  |  |  |  |  |  |
|  Staff considered needs after discharge | 1.07 (0.86–1.34) | 0.54 | 1.08 (0.88–1.34) | 0.46 | 0.96 (0.84–1.10) | 0.53 |
|  Understood how to manage health  | 1.01 (0.81–1.26) | 0.94 | 0.91 (0.73–1.12) | 0.36 | 0.86 (0.75–0.98) | 0.02 |
|  Clearly understood purpose of medicines | 0.87 (0.70–1.09) | 0.24 | 0.97 (0.78–1.20) | 0.78 | 0.98 (0.85–1.12) | 0.73 |

Odds ratio (95% confidence interval) from logistic regression analysis using model 2 (included age, sex, race, study site, and service line). Study sites were Mayo Clinic Arizona, Mayo Clinic Florida, MCHS, and Mayo Clinic Rochester. MCHS is a network that includes 17 hospitals in Minnesota and Wisconsin.

aPatients living ≤60 miles of a Mayo Clinic hospital and the HCAHPS survey was received by the third-party vendor ≤60 days after hospital discharge. Admission was to any Mayo Clinic hospital ≤30 days after survey was received by the third-party vendor.

Elixhauser comorbidity index tertiles: lower (0–3), middle (4–5), and upper (6–20).

Favorable response indicates the most satisfactory response: always; score of 9 or 10; yes; definitely yes; strongly agree.

Abbreviations: CI confidence interval; HCAHPS Hospital Consumer Assessment of Healthcare Providers and Systems; MCHS Mayo Clinic Health System.

**Supplemental Table 4: Sensitivity Analysis of Patient Experience and 30-Day Hospital Admission Categorized by Service Linea**

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| --- | --- |
| **HCAHPS survey items****(favorable vs unfavorable response)** | **30-day hospital admission after receipt of HCAHPS survey** **by the third-party vendor** |
|  | Medical service line | Surgical service line |
| **Composite Measures** | OR (95% CI) | *P* value | OR (95% CI) | *P* value |
|  Communication with Nurses | 0.96 (0.80–1.15) | 0.64 | 0.95 (0.74–1.22) | 0.68 |
|  Communication with Doctors | 0.97 (0.81–1.16) | 0.67 | 0.84 (0.65–1.09) | 0.18 |
|  Discharge Information | 1.24 (0.98, 1.55) | 0.07 | 1.03 (0.69, 1.54) | 0.90 |
|  Care Transition | 1.12 (0.93–1.33) | 0.23 | 0.80 (0.64–1.01) | 0.06 |
| **Individual Items** |  |  |  |  |
|  Cleanliness of room and bathroom | 0.89 (0.73–1.09) | 0.26 | 0.93 (0.71–1.23) | 0.61 |
|  Quietness around room at night  | 1.01 (0.85–1.21) | 0.88 | 0.98 (0.78–1.24) | 0.89 |
| **Global Items** |  |  |  |  |
|  Hospital rating | 0.78 (0.64–0.95) | 0.01 | 1.04 (0.75–1.44) | 0.82 |
|  Recommend hospital | 0.81 (0.66–1.00) | 0.048 | 1.03 (0.72–1.47) | 0.87 |

Odds ratio (95% confidence interval) from logistic regression analysis using model 2 (included age, sex, race, study site, and Elixhauser comorbidity index). Study sites were Mayo Clinic Arizona, Mayo Clinic Florida, MCHS, and Mayo Clinic Rochester. MCHS is a network that includes 17 hospitals in Minnesota and Wisconsin.

aSensitivity analysis of Patients (n = 19,461) living ≤30 miles of a Mayo Clinic hospital and the HCAHPS survey was received by the third-party vendor ≤30 days after hospital discharge. Admission was to any Mayo Clinic hospital ≤30 days after survey was received by the third-party vendor.

For composite measures, favorable indicates the most satisfactory response on all items in the composite measure. For individual overall hospital rating items, favorable indicates the most satisfactory response to the item (score of 9 or 10, definitely yes)

Abbreviations: CI confidence interval; HCAHPS Hospital Consumer Assessment of Healthcare Providers and Systems; MCHS Mayo Clinic Health System.